

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
29 November 2001 (29.11.2001)

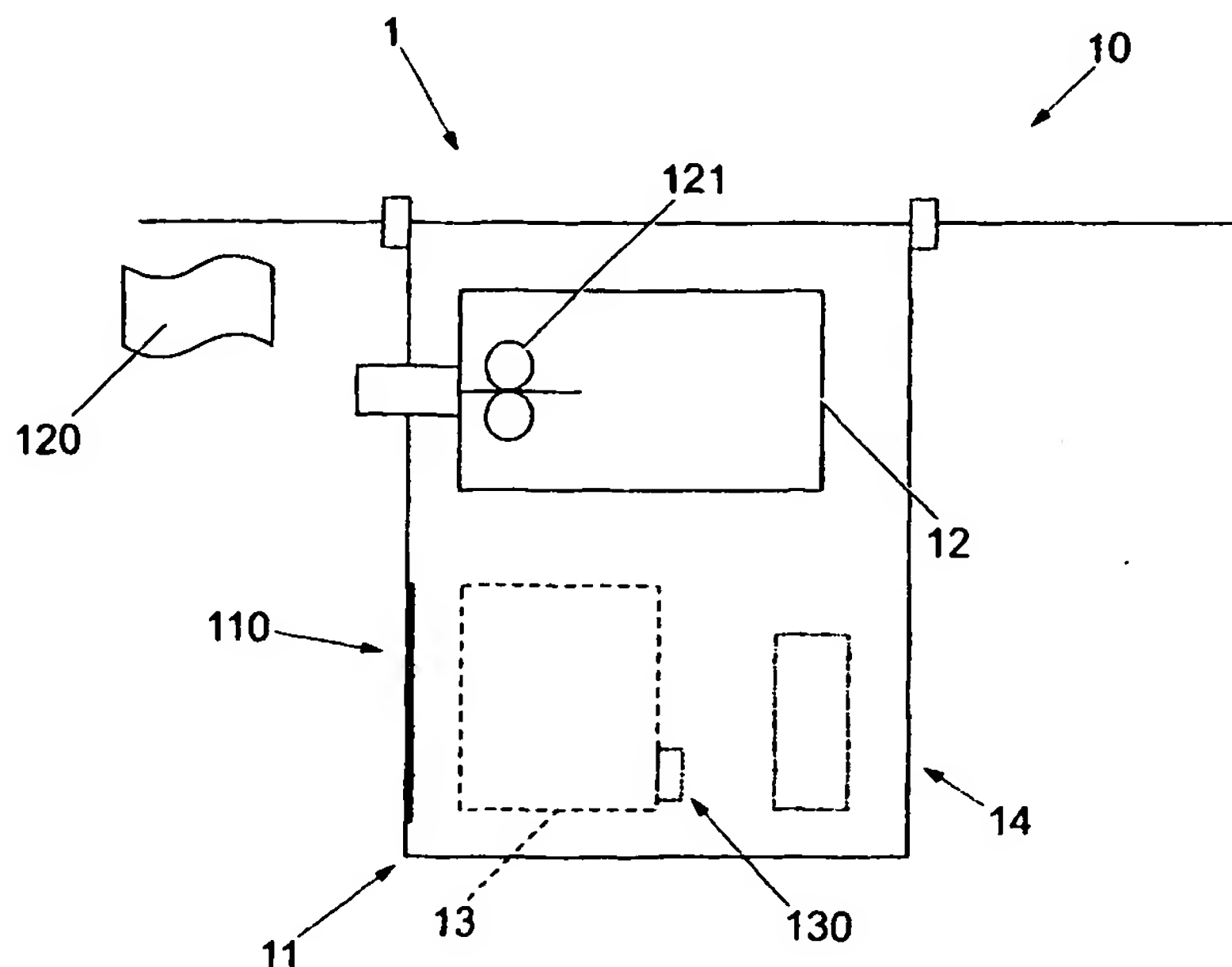
PCT

(10) International Publication Number
WO 01/91065 A1

- (51) International Patent Classification⁷: **G07D 11/00** [GB/GB]; Dunhoy, Main Street, Kinnesswood, Perthshire KY13 9HN (GB).
- (21) International Application Number: **PCT/GB01/02238**
- (22) International Filing Date: **22 May 2001 (22.05.2001)**
- (25) Filing Language: **English**
- (26) Publication Language: **English**
- (30) Priority Data:
0012770.4 25 May 2000 (25.05.2000) **GB**
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- (81) Designated States (national): **AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.**
- (84) Designated States (regional): **ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).**
- Published:
— with international search report

[Continued on next page]

(54) Title: **BANKNOTE HANDLING SYSTEM**



(57) Abstract: A banknote handling unit (10) located at a point of sale accepts banknotes via a verifier and stacker (12), which stacks the notes in a cassette (13). The cassette (13) has a non-volatile memory element (130) which stores details of the number and value of notes within the cassette at any time. The cassette (13) is removable, and can only be opened and unloaded at a secure location, where the contents are checked against the record in the memory (130).

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

1 "Banknote Handling System"

2

3 This invention relates to a banknote handling
4 system. More specifically, the invention relates to
5 a system which allows verification and secure
6 handling of banknotes in retail and similar
7 environments.

8

9 Retailers require to accept a variety of
10 denominations of banknote at high speed. They
11 ideally want to eliminate suspect notes immediately
12 and store high denominations securely in an
13 undercounter "vault" rather than in the cash
14 register.

15

16 Conventional solutions involve UV forgery detection
17 of forgery checking pen plus operator judgement then
18 placement of note into "vault" hopper and operator
19 activation of lever to stack note into vault.

20

21 It is an object of the present invention to provide
22 a banknote handling system which obviates or

1 mitigates the disadvantages of previously proposed
2 systems.

3

4 According to the present invention there is provided
5 a banknote handling system comprising: banknote
6 verifying means adapted to input banknotes and
7 verify the integrity of a banknote; means to pass
8 the checked banknote to a secure cassette: and means
9 associated with the cassette to record the value and
10 status of the notes checked by the verifying means.

11

12 Preferably, the record means is integral with the
13 cassette.

14

15 Preferably, the verifying means also effects
16 stacking of the banknotes.

17

18 Preferably, the secure cassette, together with the
19 record means are removable for subsequent emptying
20 and resetting.

21

22 The system also includes means for interrogating the
23 record means.

24

25 Preferably, the handling system is located at a
26 point of sale.

27

28 Preferably, the removable cassette can only be
29 opened at a remote secure site.

30

31 The invention also provides a cassette for use in
32 the foregoing system, the cassette comprising a

1 secure housing formed to receive banknotes one at a
2 time and sealable against unloading, the cassette
3 also comprising non-volatile memory means for
4 receiving and storing data defining the number and
5 value of banknotes inserted into the cassette.

6
7 A further aspect of the invention resides in a
8 method of handling banknotes comprising: receiving
9 banknotes at a point of sale, passing the banknotes
10 one at a time through banknote verifying means into
11 a cassette at the point of sale, storing data
12 relating to the value and number of banknotes in a
13 memory integral with or attached to the cassette,
14 transporting the cassette to a secure site, and
15 opening the cassette at the secure site.

16
17 Embodiments of the present invention will now be
18 described, with reference to the accompanying
19 drawings, in which:-

20
21 Fig. 1 illustrates schematically a banknote
22 handling system made in accordance with the
23 present invention, illustrating a point of sale
24 installation.

25
26 Fig. 2 illustrates the system in use at a
27 secure, remote, emptying site; and

28
29 Fig. 3 is a block diagram illustrating a signal
30 processing means for the record means mounted
31 on the cassette.

32

1 Referring to the drawings, a banknote handling
2 system comprising a unit 10 mountable at a point of
3 sale designated generally at 1. The unit 10
4 comprises a housing 11 which carries a banknote
5 verifying unit 12, a removable secure cassette 13
6 and a data processing unit 14.

7

8 The bank note verifying unit 12 is adapted to
9 receive banknotes 120 and includes motorised means
10 121 for handling the banknote 120, verifying its
11 status and effecting stacking of the banknote.

12

13 Banknote verifying units of this type are known
14 *per se* being used, for example, in vending machines
15 and accordingly will not be further described
16 herein.

17

18 The verifying unit 12 passes the checked, counted
19 and stacked banknotes to a secure removable cassette
20 13 mounted in the housing 11 behind a lockable door
21 110. The removable cassette is equipped with record
22 means in the form of a non-volatile memory device
23 130 which receives from the verifying unit 12 the
24 number and value of the notes stacked in the
25 cassette, and maintains a running total. As the
26 memory device 130 is mounted on the cassette, the
27 information relating to the value of the notes
28 travels with the cassette and can thus be externally
29 read, thus avoiding the need to open the cassette at
30 any stage prior to the final secure counting
31 station.

32

1 The non-volatile memory device 130 is provided with
2 a unique serial number which identifies the location
3 of the cassette. The unit is provided with a data
4 processing system 14 which allows information to be
5 made available at a point of sale.

6
7 Accordingly, as banknotes are fed into the cassette
8 13 after being processed by the verifying unit 12,
9 the appropriate information is stored in the non-
10 volatile memory device 130 which thus carries
11 complete data of the number and value of the notes
12 in the cassette 13.

13
14 Referring no to Fig. 2, there is illustrated a
15 system for interrogating the cassette in, for
16 example, a cash office after the cassette has been
17 removed from the point of sale unit. The sealed
18 cassette, removed from the point of sale unit, is
19 passed to a reader/writer unit 20 which interrogates
20 the memory device 130 for further processing.

21
22 Alternatively, the cassette data may have already
23 been interrogated where the vault reader/writer
24 electronics is fitted with the optional
25 communications interface.

26
27 The unopened cassette 13 can be deposited in a safe
28 for uplifting by the bank or security company. The
29 unique identifier number of each cassette identifies
30 the retailer, branch number and cash register number
31 from which the cassette came, without the need for
32 accompanying paperwork.

1 Once the cassette 13 is opened (usually by the bank
2 or security company) and the banknotes removed, the
3 memory device 130 may be "cleared" by use of the
4 reader "wand" or by means of a command sent on the
5 vault communications port once the cassette 13 is
6 re-inserted in the vault.

7

8 The banknote handling system of the present
9 invention has significant advantages to the
10 retailer.

11

- 12 - automating the verification and stacking of
- 13 banknotes at Point of Sale (POS)
- 14 - counting the notes automatically at POS
- 15 - allowing a locked or sealed, secure, identifiable
- 16 and reusable cassette to be taken direct from POS to
- 17 bank
- 18 - tracking of a cassette to an individual retailer,
- 19 branch, register and operator is possible by virtue
- 20 of unique serial number carried in every non-
- 21 volatile memory device
- 22 - vaults may be interfaced to the retailers POS
- 23 system to provide continuous, on-line data.

24

25 Optionally, the vault may be fitted with a
26 communications port to allow direct connection to
27 the retailers' central systems, to a network or to a
28 hand held device thus allowing access to the
29 cassette memory data without removal of the cassette
30 from the vault.

31

1 Modifications and improvements may be incorporated
2 without departing from the scope of the invention,
3 for example:

4

5 a) The interface between the vault reader/writer
6 electronics and the memory device attached to the
7 cassette may involve physical contacts, a wireless
8 or inductive contactless system, an optical link or
9 any other suitable interface.

10

11 b) The external communications interface of the
12 reader/writer electronics may be a conventional
13 serial or parallel interface, a network port (such
14 as RS485 or Ethernet) or an optical link (such as
15 IrDA).

16

17 c) The reader wand may be a "cradle" into which
18 the cassette is placed, a hand-held device, or any
19 suitable apparatus.

20

21 d) The reader wand may be fitted with a printer to
22 allow the cassette data to be printed as, for
23 example, a receipt or audit trail.

1 CLAIMS

2

3 1. A banknote handling system comprising: banknote
4 verifying means adapted to input banknotes and
5 verify the integrity of a banknote; means to pass
6 the checked banknote to a secure cassette; and means
7 associated with the cassette to record the value and
8 status of the notes checked by the verifying means.

9

10 2. A banknote handling system according to claim 1,
11 in which the record means is integral with the
12 cassette.

13

14 3. A banknote handling system according to claim 1
15 or claim 2, in which the verifying means also
16 effects stacking of the banknotes.

17

18 4. A banknote handling system according to any
19 preceding claim, in which the secure cassette
20 together with the record means are removable for
21 subsequent emptying and resetting.

22

23 5. A banknote handling system according to any
24 preceding claim, further including means for
25 interrogating the record means.

26

27 6. A banknote handling system according to any
28 preceding claim which is adapted to be located at a
29 point of sale.

30

1 7. A banknote handling system according to claim 6,
2 in which the removable cassette can only be opened
3 at a remote secure site.

4

5 8. A cassette for use in the system of any
6 preceding claim, the cassette comprising a secure
7 housing formed to receive banknotes one at a time
8 and sealable against unloading, the cassette also
9 comprising non-volatile memory means for receiving
10 and storing data defining the number and value of
11 banknotes inserted into the cassette.

12

13 9. A method of handling banknotes comprising:
14 receiving banknotes at a point of sale, passing the
15 banknotes one at a time through banknote verifying
16 means into a cassette at the point of sale, storing
17 data relating to the value and number of banknotes
18 in a memory integral with or attached to the
19 cassette, transporting the cassette to a secure
20 site, and opening the cassette at the secure site.

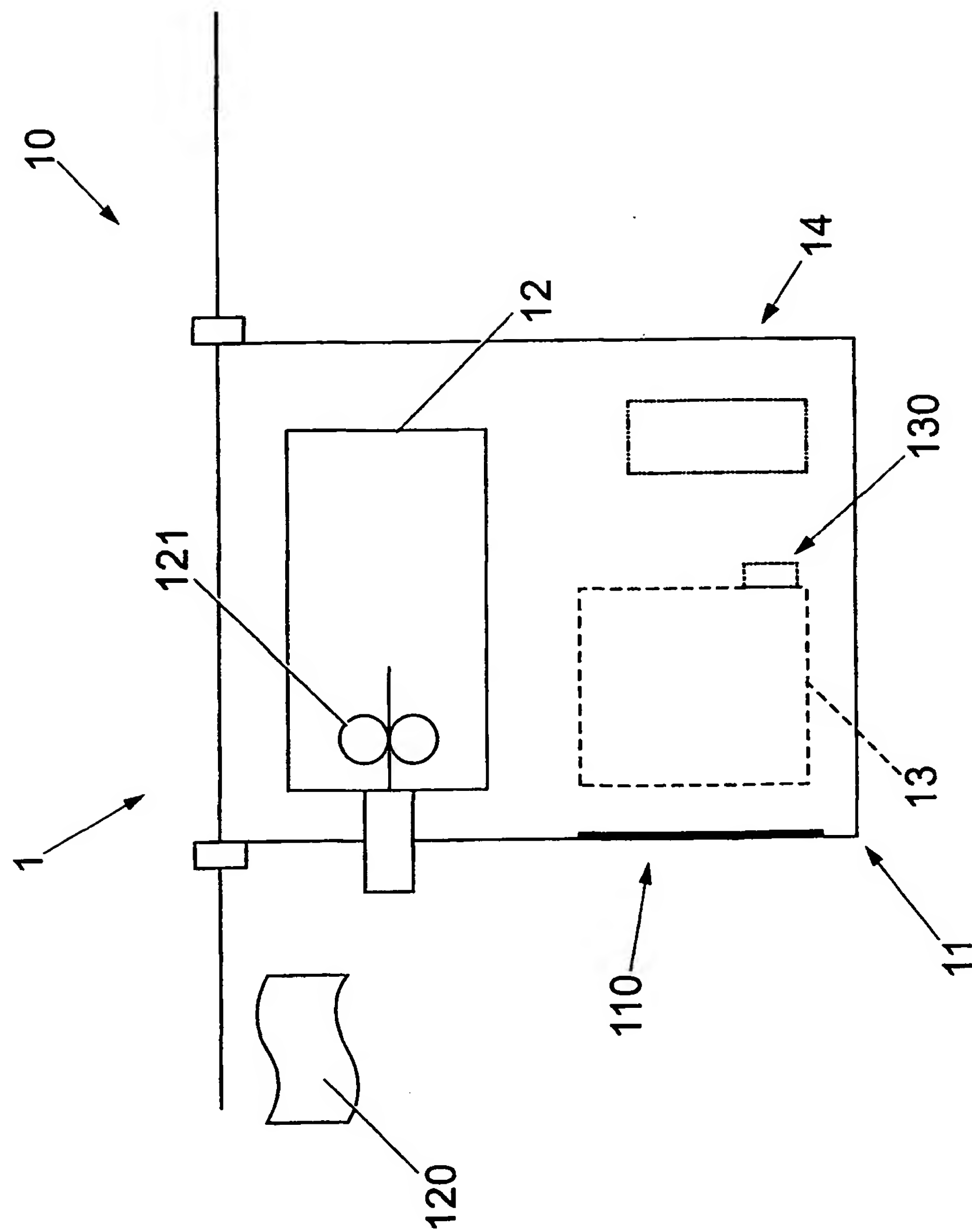


Fig. 1

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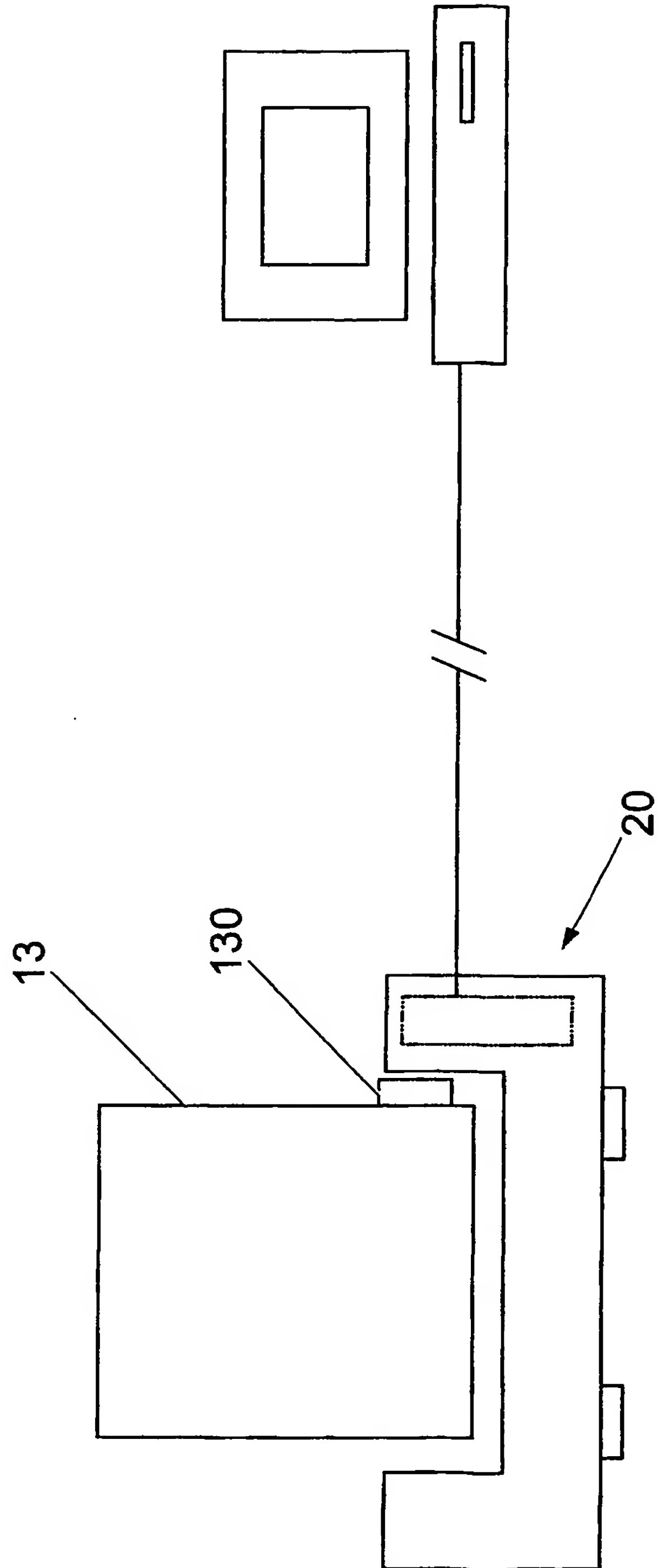


Fig. 2

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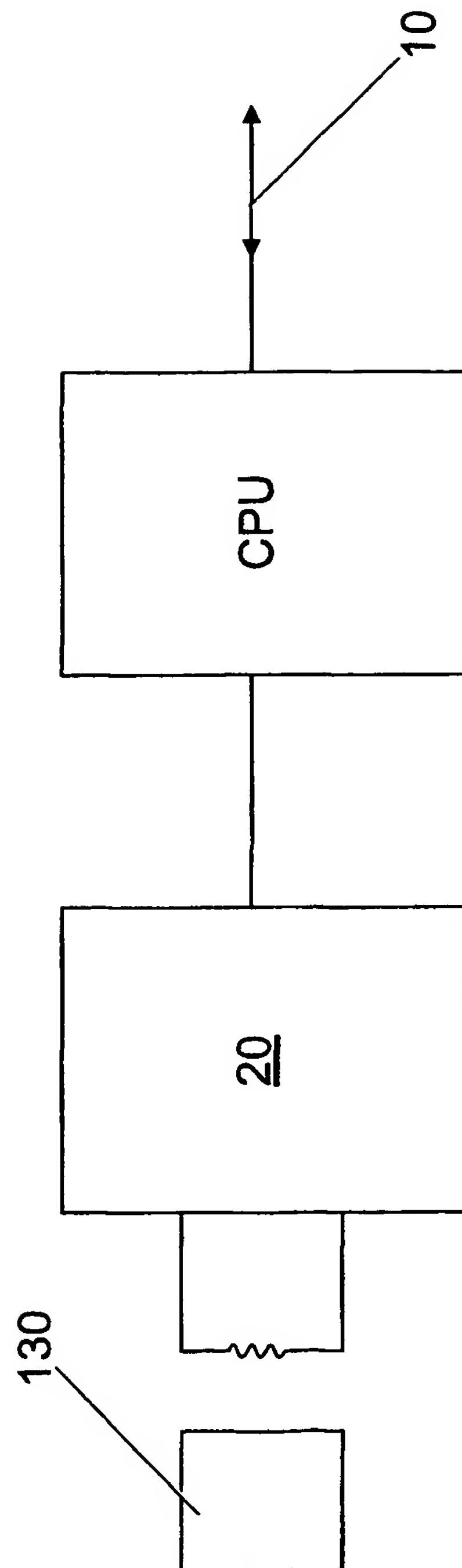


Fig. 3

INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 01/02238

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 607D11/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 607D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 977 583 A (GORGONE ROBERT L) 11 December 1990 (1990-12-11) the whole document ---	1-9
X	US 5 730 271 A (SCHWARTZ VLADIMIR A ET AL) 24 March 1998 (1998-03-24) the whole document ---	1-9
X	US 5 975 274 A (NOVAK FRANK A ET AL) 2 November 1999 (1999-11-02) column 3, line 8 -column 4, line 45 figures 1-5 ---	1-9
X	GB 2 246 656 A (TIMETILL SECURITY LTD) 5 February 1992 (1992-02-05) abstract page 15, paragraph 2 -page 20, paragraph 1 -----	1-9

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Date of the actual completion of the international search

28 August 2001

Date of mailing of the international search report

05/09/2001

Name and mailing address of the ISA

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INTERNATIONAL SEARCH REPORT
 Information on patent family members

International Application No
PCT/GB 01/02238

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